Assignment

Q) write 4 difference between aerobic and anaerobic respiration

Aerobic	Anaerobic
- It refers to complete breakdown of metabolic fuels in presence of O_2	- It refers to partial breakdown of metabolic fuel (glucose) in absence of O_2
- It includes glycolysis, citric acid cycle and oxidative phosphorylation. The first 2 processes take place in the cytoplasm while the last one occurs in mitochondria	- Glycolysis is followed by ethanol fermentation (occurs in yeast) or lactic acid fermentation (in muscles and microbes like lactic acid bacteria)
- The end products are CO_2 and H_2O	- End products are ethanol + CO_2 for ethanol fermentation and lactic acid for lactic acid fermentation
- Owing to complete oxidation of glucose a large of glucose a large amount of energy is produced (36-38) ATP molecules	- Incomplete oxidation of glucose doesn't release all stored energy and only 2 ATP molecules are produced.

(2) What are the different ways in which glucose is oxidised to provide energy in various organisms?

Breaking down of glucose involves process. In first step, it is broken into 3 → Carbon molecules called pyruvate. The pyruvate is further broken down to release energy in the following different ways:-

(i) Aerobic respiration: In this case pyruvate is broken down into water & CO_2 along with the release of energy. It commonly occurs in the mitochondria of cells

(ii) Anaerobic respiration: breaking down of pyruvate takes place in presence of O_2 to give rise 3 molecules of CO_2 & H_2O. And pyruvate is converted into ethanol & CO_2

(3) The autotrophic mode of nutrition requires CO_2 & H_2O, sunlight & Chlorophyll

(d) All the above

Aerobic

- Refers to complete breakdown of metabolic fuel in presence of O_2
- It includes glycolysis, citric acid cycle and phosphorylation. The first 2 process take place in the cytoplasm while last one occur in mitochondria
- End products are CO_2 and H_2O
- Overall complete oxidation of glucose a large amount of energy is produced (36-38 ATP molecules)

Anaerobic

- It is partial breakdown of metabolic fuel (glucose) in absence of O_2
- Glycolysis is followed by ethanol fermentation (in muscles and microbes like lactic acid bacteria)
- End products of ethanol fermentation are ethanol and CO_2 and that of lactic acid fermentation is lactic acid
- Incomplete oxidation of glucose doesn't release all stored energy and only 2 atp molecules are produced

Organisms: Multicellular organisms like human, dogs, cats etc.	Organisms: Yeast ~~bacteria~~ bacteria and bacteria, E.coli, staphylococci etc.